Claim Amendments

The following listing of the claims replaces all prior versions and listings of the claims in the application:

1-19. (Cancelled)

20. (Currently amended) ~~The micromachined device of claim 1~~ A micromachined device for thermal processing at least one fluid stream, the micromachined device comprising at least one fluid conducting tube, wherein at least a region of the fluid conducting tube has a wall thickness of less than 50 μm, the micromachined device further comprising a thermoelectric device.

21. (Currently amended) ~~The micromachined device of claim 1~~ A micromachined device for thermal processing at least one fluid stream, the micromachined device comprising at least one fluid conducting tube, wherein at least a region of the fluid conducting tube has a wall thickness of less than 50 μm, and wherein the micromachined device is a component of a thermophotovoltaic device.

22. (Currently amended) ~~The micromachined device of claim 1~~ A micromachined device for thermal processing at least one fluid stream, the micromachined device comprising at least one fluid conducting tube, wherein at least a region of the fluid conducting tube has a wall thickness of less than 50 μm, and wherein the micromachined device is a component of a portable power generator.

23. (Cancelled)

24. (Original) A micromachined device for processing at least one fluid stream, the micromachined device comprising:

at least one fluid conducting tube; and

at least one thermally conductive structure in thermal communication with a first thermally insulating portion of the fluid conducting tube and a second thermally insulating portion of the fluid conducting tube.

25. (Original) The micromachined device of claim 24, wherein the first thermally insulating portion of the fluid conducting tube is an inlet portion and the second thermally insulating portion of the fluid conducting tube is an outlet portion.

26. (Original) The micromachined device of claim 24, wherein the thermally conductive structure comprises silicon.

27. (Original) The micromachined device of claim 24, wherein at least a region of the fluid conducting tube has a wall thickness of less than 50 μm.

28. (Original) The micromachined device of claim 24, wherein at least a region of the fluid conducting tube has a wall thickness of less than 5 μm.

29. (Original) The micromachined device of claim 24, wherein at least a region of the fluid conducting tube has a wall thickness of 0.1-3 μm.

30. (Original) The micromachined device of claim 24, wherein at least one post is disposed within the fluid conducting tube.

31. (Original) The micromachined device of claim 24, wherein the fluid conducting tube has a stress-relieving shape.

32. (Original) The micromachined device of claim 24, wherein a catalyst is disposed within the fluid conducting tube.

33. (Original) The micromachined device of claim 25, further comprising a substrate defining a sealed cavity, at least a region of the inlet portion and at least a region of the outlet portion disposed in the substrate, and wherein substantial portions of the fluid conducting tube are mounted within the sealed cavity.

34. (Original) A micromachined device for processing at least two fluid streams, the micromachined device comprising:

a first fluid conducting tube;

a second fluid conducting tube; and

at least one thermally conductive structure in thermal communication with a thermally insulating portion of the first fluid conducting tube and a thermally insulating portion of the second fluid conducting tube.

35. (Original) The micromachined device of claim 34, wherein at least a region of at least one of the first fluid conducting tube and the second fluid conducting tube has a wall thickness of less than 50 μm.

36. (Original) The micromachined device of claim 34, wherein at least a region of at least one of the first fluid conducting tube and the second fluid conducting tube has a wall thickness of less than 5 μm.

37. (Original) The micromachined device of claim 34, wherein at least a region of at least one of the first fluid conducting tube and the second fluid conducting tube has a wall thickness of 0.1-3 μm.

38. (Original) A micromachined device for processing at least one fluid stream, the micromachined device comprising:

a thermally conductive region; and

at least one fluid conducting tube with at least one thermally insulating portion, at least a portion of the fluid conducting tube disposed within the thermally conductive region.

39. (Original) The micromachined device of claim 38, wherein at least one post is disposed within the portion of the fluid conducting tube disposed within the thermally conductive region.

40. (Original) The micromachined device of claim 39, wherein the posts are thermally conductive.

41. (Original) The micromachined device of claim 38, wherein the thermally conductive region is substantially isothermal during operation of the micromachined device.

42. (Original) The micromachined device of claim 38, wherein the thermally conductive region comprises silicon.

43. (Original) The micromachined device of claim 38, wherein the portion of the fluid conducting tube disposed within the thermally conductive region is encased within the thermally conductive region.

44. (Original) The micromachined device of claim 38, wherein at least a region of at least one of the first fluid conducting tube and the second fluid conducting tube has a wall thickness of less than 50 μm.

45. (Original) The micromachined device of claim 38, wherein at least a region of at least one of the first fluid conducting tube and the second fluid conducting tube has a wall thickness of less than 5 μm.

46. (Original) The micromachined device of claim 38, wherein at least a region of at least one of the first fluid conducting tube and the second fluid conducting tube has a wall thickness of 0.1-3 μm.

47. (Original) The micromachined device of claim 38, wherein at least one post is disposed within at least one fluid conducting tube.

48. (Original) A method for processing at least one fluid stream, the method comprising:

providing a micromachined device including at least one fluid conducting tube having a thermally insulating inlet portion, and a thermally insulating outlet portion, and at least one thermally conductive structure in thermal communication with the inlet portion and the outlet portion;

introducing a stream of at least one fluid into the inlet portion of the fluid conducting tube;

processing the fluid stream within the fluid conducting tube; and

conducting thermal energy between the inlet portion and the outlet portion through the thermally conductive structure.

49. (Original) The method of claim 48, wherein the micromachined device further comprises a thermally conductive region, at least a portion of the fluid conducting tube disposed within the thermally conductive region.

50. (Original) The method of claim 48, wherein at least one fluid reacts within the fluid conducting tube to produce at least two fluid reaction products, the fluid comprising ammonia and the fluid reaction products comprising hydrogen and nitrogen.

51. (Original) The method of claim 48, wherein at least two fluids react within the fluid conducting tube to produce at least two fluid reaction products, the fluids comprising methanol and water and the fluid reaction products comprising carbon dioxide and hydrogen.

52. (Original) The method of claim 48, wherein at least two fluids react within the fluid conducting tube to produce at least two fluid reaction products, the fluids comprising air and butane and the fluid reaction products comprising water and carbon dioxide.

53. (Original) The method of claim 48, wherein at least two fluids react within the fluid conducting tube to produce at least two fluid reaction products, the fluids comprising air and butane and the fluid reaction products comprising hydrogen and carbon monoxide.

54. (Original) The method of claim 49, further comprising:

providing a second fluid conducting tube having an inlet portion, and an outlet portion, at least a portion of the fluid conducting tube disposed within the thermally conductive region;

directing at least a portion of the fluid reaction products from the outlet portion of the fluid conducting tube to a fuel cell;

directing at least a portion of fluids exiting the fuel cell to the inlet portion of the second fluid conducting tube; and

reacting the portion of the fluids exiting the fuel cell within the second fluid conducting tube to produce thermal energy and heat the thermally conductive region.

55. (Original) The method of claim 48, further comprising providing a catalyst within at least a region of the fluid conducting tubes.

56. (Original) A portable power generator comprising:

a micromachined device including

at least one fluid conducting tube, and

at least one thermally conductive structure in thermal communication with a first thermally insulating portion of the fluid conducting tube and a second thermally insulating portion of the fluid conducting tube; and

a fuel cell in fluid communication with the fluid conducting tube.

57. (Original) A method for generating power comprising:

providing a micromachined device including

at least one fluid conducting tube, and

at least one thermally conductive structure in thermal communication with a first thermally insulating portion of the fluid conducting tube and a second thermally insulating portion of the fluid conducting tube;

providing a fuel cell in fluid communication with the fluid conducting tube;

producing a fuel within the fluid conducting tube; and

conveying the fuel to the fuel cell.

58. (Original) The method of claim 57, wherein the fuel comprises hydrogen.

59. (Original) The method of claim 57, wherein producing a fuel comprises reacting a stream of at least one fluid within the fluid conducting tube to produce at least

two fluid reaction products, the fluid comprising ammonia and the fluid reaction products comprising hydrogen and nitrogen.

60. (Currently amended) The method of claim 57, wherein producing a fuel comprises reacting a stream of at least two fluids within the fluid conducting tube to produce at least two fluid reaction products, the fluids comprising methanol and water and the fluid reaction products comprising carbon dioxide and hydrogen.

61. (Currently amended) The method of claim 57, wherein producing a fuel comprises reacting a stream of at least two fluids within the fluid conducting tube to produce at least two fluid reaction products, the fluids comprising air and butane and the fluid reaction products comprising hydrogen and carbon monoxide.

62-73. (Cancelled)

74. (Currently amended) The micromachined device of claim 30, wherein the the at least one posts ~~are~~ is thermally conductive.

75. (Original) The method of claim 57, wherein the fuel comprises hydrogen and carbon monoxide.

76. (New) The micromachined device of claim 20, wherein a catalyst is disposed within the fluid conducting tube.

77. (New) The micromachined device of claim 21, wherein a catalyst is disposed within the fluid conducting tube.

78. (New) The micromachined device of claim 22, wherein the fluid conducting tube includes an inlet portion, an outlet portion and an intermediate portion intermediate the inlet portion and the outlet portion.

79. (New) The micromachined device of claim 22, wherein the fluid conducting tube comprises silicon nitride.

80. (New) The micromachined device of claim 22, wherein at least a region of the fluid conducting tube has a wall thickness less than 5 μm.

81. (New) The micromachined device of claim 22, wherein at least a region of the fluid conducting tube has a wall thickness of 0.1 to 3 μm.

82. (New) The micromachined device of claim 22, wherein the micromachined device includes at least one inlet portion for introducing a fluid into the fluid conducting tube.

83. (New) The micromachined device of claim 22, wherein the fluid conducting tube has a stress-relieving shape.

84. (New) The micromachined device of claim 22, wherein the fluid conducting tube is generally U-shaped.

85. (New) The micromachined device of claim 22, wherein at least one post is disposed within the fluid conducting tube.

86. (New) The micromachined device of claim 85, wherein the at least one post comprises a catalyst.

87. (New) The micromachined device of claim 22, wherein at least one static fluidic mixing structure is disposed within the fluid conducting tube.

88. (New) The micromachined device of claim 22, wherein at least one passive fluidic stop valve is disposed within the fluid conducting tube.

89. (New) The micromachined device of claim 78, further comprising a substrate, and wherein one or more regions of the inlet and outlet portions of the fluid conducting tube are disposed in the substrate.

90. (New) The micromachined device of claim 22, wherein a catalyst is disposed within the fluid conducting tube.

91. (New) The micromachined device of claim 78, wherein a catalyst is disposed within the intermediate portion of the fluid conducting tube.

92. (New) The micromachined device of claim 22, further comprising a sensor.

93. (New) The micromachined device of claim 22, futher comprising an actuator.

94. (New) The micromachined device of claim 22, further comprising a substrate defining a sealed cavity, wherein substantial portions of the fluid conducting tube are mounted within the sealed cavity.

95. (New) The micromachined device of claim 22, wherein the fluid conducting tube comprises at least one junction where one tube is connected to at least two tubes.